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(54) **Diaper with reduced material consumption topsheet and improved fecal containments**

Babywindel mit oberer Abdeckung zum verminderten Rohstoffverbrauch und mit verbesserter Eindämmung der Fäkalien

Couche-culotte avec feuille intérieure à consommation réduite des matériaux et à rétention améliorée des fèces

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Description

The invention relates to a disposable absorbent pad such as a baby diaper or adult incontinent pad, comprising

- a backsheet,
- a multi-ply topsheet, and
- an absorbent core between said backsheet and said topsheet, whereby
- said core has lateral edges and end edges,
- the backsheet and the multi-ply topsheet are secured together around the edges of said core to hold said core therebetween,
- said multi-ply topsheet has a first ply of substantially the same width as the backsheet and a second ply which overlies the said first ply,
- said second ply has lateral edges defining a width narrower than the width of said first ply,
- said second ply is secured on top of said first ply along a pair of fastening lines spaced inwardly from the lateral edges of the core,
- said second ply has elastic members secured along the lateral edges thereof,
- said elastic members have ends,
- said lateral edges of said second ply extend away from the first ply, under the influence of the said elastic members between the said elastic members and the said fastening lines, and
- the ends of said elastic members are unsecured to the first ply.

In the mid-1960's, Procter & Gamble Company developed and effectively commercialized the one-piece disposable diaper having a rectangular absorbent pad with an integral plastic backing sheet folded into a "wing"-shape and marketed under the trademark "PAMPERS". Such a product is illustrated by the Duncan U.S. Patent 3,180,335.

Ten years later, in the mid-1970's, the shaped elastic leg diaper became popular and has dictated the baby diaper development for the last 15 years. This product is illustrated by the Buell U.S. Patent 3,860,003.

During the last few years, at least nine specific significant changes have been made to the disposable baby diaper:

- 1) Dry-touch covers with transport sub-layers (Meyer U.S.Pat. 4,798,603).
- 2) Frontal tapes with fit guides (Hirotsu U.S.Pat.4,662,875).
- 3) Elastic waist bands (Kievit U.S.Pat. 4,515,595).
- 4) Multistrand elastic legs (Suzuki U.S.Pat. 4,425,127).
- 5) Superabsorbent cores (Weisman U.S.Pat. 4,610,678)
- 6) Leakage control end dams (Woon U.S.Pat.4,296,750).
- 7) Stretchable tapes (Jacobs U.S.Pat.3,800,796).

8) Gender specific cores (Weisman U.S.Pat.4,673,402).

9) Fecal control cuffs (Enloe U.S. Pat.4,704,116).

Of these improvements, the most recent and technically intriguing are the dry-touch cover and the fecal control cuffs.

The dry-touch cover creates a body-contacting surface which is hydrophobic and, therefore, presents no moisture against the body of the infant wearing the diaper. To accomplish this end-result, the covers have been made of plastic film or of carded, melt-blown, spun bonded or hydroentangled hydrophobic fibers, to permit rapid pass-through of the fluid to the diaper cores which have been made particularly and effectively absorbent, so that the fluid can be entrapped in the core. The core is designed so that it reduces as much as possible the wet-back of the fluid, under pressure, toward the body of the infant.

This dry-touch cover can also be made more effective by increasing the thickness of the coverstock material as shown in the Brock U.S.Pat.4,766,029, or by the utilization of the Procter & Gamble perforated plastic film illustrated by the Thompson U.S. Pat. 3,929,135.

The thickness of the coverstock material can also be increased by utilizing high-loft fibers as shown in the Muhlratzer U.S.Pat. 4,761,323 or, as in the Kimberly-Clark Meyer U.S. Pat. 4,798,603, by introducing one or more sub-layers of material between the coverstock and the core to draw the fluid away from the coverstock by capillary action.

The thicker the caliper of the web of the coverstock, the more expensive it becomes (because of material costs and production costs) and, quite frequently, it also becomes stiffer. All of this renders it less desirable than a lightweight, thin coverstock material.

As for the fecal control feature, changes to the early wing-fold "PAMPERS" included upstanding edges as shown in Schroeder U.S.Pat. 4,246,900 and Buell U.S. Pat. 4,636,207. The barrier "cuffs" were first commercialized in Japan as illustrated by the Suzuki U.S.Pat. 4,834,704 and Igau U.S.Pat. 4,822,435. More recent diapers have featured the barriers shown in the Enloe U.S.Pat. 4,704,116 and the Lawson U.S.Pat. 4,695,278.

The effectiveness of such a construction is in its ability to contain feces (which generally do not penetrate into the absorbent core as does urine), by preventing the feces from spilling over the edge of the diaper, soiling the infant's garments or the surrounding environment.

Each of the features referred to above, particularly the dry-touch cover and the fecal containment cuffs have been developed independently of each other.

EP-A-0 219 326 discloses the diaper of the generic kind as mentioned in the first section of the specification comprising a liquid pervious multi-ply topsheet, a liquid impervious backsheet, an absorbent core disposed between the topsheet and the backsheet and barrier cuffs with elastic members. The multi-ply topsheet com-

prises a first ply and a second ply. These plies are secured flat one upon another without any gap therebetween. However, this arrangement of these plies results in a non-optimal wet-back characteristic.

It is the object of the present invention to provide a disposable absorbent pad of the generic kind the performance of which is improved by decreasing the wet-back of the diaper and, at the same time, by providing better fecal containment.

This object is achieved with the disposable absorbent pad of the generic kind in that said first ply and said second ply are unsecured to each other between the fastening lines to provide a space therebetween.

According to the invention a multi-ply coverstock of thin web material is provided, one web of which also provides the fecal containment cuffs. The end result is that the cost of the coverstock is significantly reduced, the pass-through of the fluid from the body-side into the core is enhanced, the wet-back of the fluid from the core back to the body is reduced, the feces are kept on the diaper, and the overall performance of the diaper is enhanced.

As significant as is the design with regard to performance, it is also important in that it is a major step in the source reduction of waste and in the consumption of less raw material, and thus it reduces the adverse environmental impact of disposing of disposable diapers.

The disposable diaper of the present invention is generally similar to the shaped elastic leg products presently on the market, in that it includes (1) a backsheet which may be pervious to moisture vapor, but is impervious to fluid, (2) a topsheet which is in contact with the body of the infant and permits rapid pass-through of the urine into the absorbent core, and (3) an absorbent core, between the backsheet and the topsheet, which may be enhanced by the addition of super-absorbent materials or the like.

The diaper of the present invention, however, has a construction which provides better performance, because it does not have a sub-layer under the topsheet but, in fact includes an overlayer which improves the re-wet characteristics of the diaper without increasing the caliper of the coverstock material of which current diapers are made. Furthermore, there is a cost-improvement characteristic, because each of the layers of the multi-ply coverstock is less than half as thick as the conventional coverstock, and, in a major portion of the diaper, only one of the layers of the topsheet extends the full width of the diaper. The overlayer, which also includes the upstanding cuffs, is also narrower than the width of the conventional coverstock.

It is also important to note that in a diaper construction wherein the body-contacting portion is constructed of two thin layers of material rather than one thick layer, that the material degrades more effectively and quicker than does a single thick layer.

A significant characteristic of this diaper is that the space between the plies of the topsheet, where the plies are not bonded to each other, creates a structure which

improves the dryness by decreasing the wetback of the fluid from the core to the body.

Summarizing, according to the invention an improved disposable baby diaper is provided which has better performance characteristics, and which has less adverse environmental impact than previous disposable baby diapers, which consumes less raw materials than conventional baby diapers, and thus is economically more effective and more environmentally attractive and which has improved wetback characteristics resulting from the use of an overlayer with unitary fecal control barriers or cuffs.

In the present invention, a disposable baby diaper is provided which has a well-known backsheet which may be pervious to gases, but which is impervious to liquids, a body-contacting topsheet or coversheet which is pervious, both to liquids and to gases, and an absorbent core which is disposed between the backsheet and the coversheet. It also includes the well-known tape-tabs for fastening the diaper around the body of the infant and may, selectively, also include a frontal tape or landing strip against which the tape tabs are secured; an elastic waistband mechanism at one or both ends of the diaper for enhancing the fit around the waist of the infant; one or more strands of leg elastics material which may be either rubber, LYCRA (a DuPont trademark) or polymer foam material for insuring that the diaper fits closely around the leg of the infant; absorbent-enhancing material within the core, such as superabsorbent granules or fibers; leakage control end dams at the waistband portions of the diaper and other sub-modifications such as stretchable tape-tabs or gender-specific absorbent core design.

In the present invention the coverstock is constructed of multi-ply material, one of which, preferably is less than half as thick as conventional coverstock, extends completely over the upper surface of the body-contacting surface of the diaper, is bonded to the backsheet around the periphery of the diaper, and which construction retains the core between the said ply and the backsheet.

Superimposed on the aforementioned coverstock ply is a second ply overlayer which preferably is the same material and thickness as the aforementioned first ply, but which is narrower, includes a pair of upstanding cuffs, and which is bonded to the aforementioned first ply only along the bottom edges of the upstanding cuffs so as to provide a space between the two plies, between the upstanding cuffs, where the two plies are not connected to each other and, therefore, provide improved wetback characteristic for the diaper.

In summary, the diaper of the present invention with the multi-ply coverstock material provides:

- 1) A better diaper performance, both in pass-through and in anti-wetback.
- 2) A cost and material savings because of the absence of crepe tissue around the core.

3) There is no sub-layer under the first ply portion of the coverstock.

4) The overlayer portion of the coverstock improves the re-wet characteristics without increasing (in fact, decreasing) the caliper of the coverstock.

5) Since coverstock material is generally sold in large volumes, there is a substantial cost reduction to the manufacturer of the diaper which can result in a reduced cost of the diaper to the mother.

6) The space between the plies of multi-ply coverstock improves the wetback.

7) The absence of adhesive between the two plies or the core-contaction ply improves the economics because there is no adhesive to be purchased for this application.

An embodiment of the invention is subsequently described referring to the accompanying drawings, in which

Figure 1 is a top plan view of the diaper of the present invention stretched out and lying flat and viewed against the topsheet.

Figure 2 is a cross-sectional view taken generally along line 2-2 of Figure 1.

Figure 3 is a fragmentary vertical cross-sectional view taken generally along line 3-3 of Figure 1.

Figure 4 is a fragmentary cross-sectional view showing the assembly of the backsheet, the topsheet, the absorbent core, and the leg elastics.

Figure 5 is a schematic vertical cross-sectional view of the upstanding cuffs and the overlaid portion of the topsheet of the present invention.

Figure 5a is a schematic, vertical, cross-sectional view similar to Figure 5 illustrating another version of the in-turned upper portion of the upstanding cuffs.

Figure 5b is a schematic, vertical, cross-sectional view similar to Figures 5 and 5a, illustrating yet another means of providing the upper edge of the cuff with a "cushion".

Figure 6 is a schematic cross-sectional view showing the combination of the views of Figures 4 and 5 showing the assembly of the multi-ply coverstock material.

Figure 7 is a schematic, vertical, cross-sectional view similar to Figure 5a illustrating another form of cuff construction to render it impervious.

Figure 8, like Figure 5a is yet another form of cuff construction with the overlayer formed separately from the cuffs.

Figure 9 illustrates how the coverstock can be formed from a plurality of materials.

Referring now to Figure 1, there is shown a disposable baby diaper 10, which includes an impervious backsheet 11 and a pervious topsheet 12 with an absorbent core 13 disposed between the topsheet and the backsheet.

The topsheet and the backsheet are generally joined together around the periphery of the core, either by thermo-bonding or by a light layer of adhesive 14, all as is well-known in the art.

One or more elastic strands 15, which may be made of rubber, laytex, LYCRA (a DuPont trademark), or an elastic foam material, extend through the crotch portion 16 of the diaper, generally outboard of the edges 17 of the core, in the crotch portion, but which may overlap the ears 18 of the core 13, as at 19, in the waistband portions 20 and 21.

By "outboard" is meant laterally beyond the longitudinal centerline of the diaper and preferably laterally beyond the longitudinal side edge of the core.

A plurality of refastenable tape members 22 are attached to the diaper in the rear waistband portion 20, as shown in Figures 1 and 2. These tape fasteners, when applied by the care-giver of the patient, or the mother of the baby, are generally fastened to the outer surface of the backsheet 11 in the front waistband portion 21 or, as more recently practiced, to a frontal tape (not shown) which enhances the refastenability of the taping system and also reinforces the frontal portion of the baby diaper.

Additionally, elastic waistband members 23 and 24 may be applied between the backsheet 11 and the coversheet 12 in the waistband portions 20 and 21, to enhance the fitting characteristics of the diaper.

Furthermore, leakage control barriers or "end dams" (not shown) may also be applied in lieu of elastic members 23 and 24, or in addition thereto, or may be combined as a portion of the elastic members 23 and 24 to reduce the likelihood of leakage of the urine at the ends of the waistband portions 20 and 21.

In the conventional baby diaper design, the coverstock 12 is generally a single ply of nonwoven material which may be made of carded fibers, either adhesively or thermally bonded, perforated plastic film, spun bonded fibers, or water entangled fibers, which generally weigh $2.37 \cdot 10^{-2} \text{ kg/m}^2$ (.7 oz./sq. yd.) and having appropriate and effective machine-direction and cross-machine directional strength suitable for use as a baby diaper coverstock material.

However, in the diaper of the present invention, that portion of the coverstock material which completely overlies the diaper, as shown in Figure 1, is made of a web weighing only $1.02 \cdot 10^{-2} \text{ kg/m}^2$ (.3 oz./sq. yd.), but with increased cross-directional tensile strength and with improved fluid-transmitting characteristics and, therefore, costs significantly less than the price of conventional coverstock.

It will be noted, particularly, that the absorbent core 13, which has been made of absorbent fibers in a manner to produce a high integrity of the core, preferably does not have the customary or conventional creped tissue wadding wrapped around it and, therefore, the absence of that creped tissue material also decreases the cost of the diaper of the present invention.

The diaper of the present invention includes a second ply 25 of the lightweight ($1.02 \cdot 10^{-2}$ kg/m² (.3 oz./sq. yd.)) coverstock material. This portion of the multi-ply coverstock has a central area 26 which is narrower than the distance between the lateral edges 17 of the absorbent core, and which includes the upstanding portions 27 and 28 to provide the fecal containment area generally indicated at 29 in Figure 2.

The upper portions 27a and 28a of the cuffs 27 and 28 are turned back upon themselves either inwardly or outwardly, and have disposed therebetween elastic strands 30a and 30b, which are adhesively secured to the upper edges of the cuffs 27 and 28 along the entire length thereof.

As is shown in Figure 5, the upper edges of the cuffs 27 and 28 are turned outwardly as at 27a and 28a. In Figure 5a, we have shown an alternative and preferred version where the upper portions are turned inwardly. This version, accomplishing the same end-result as the version shown in Figure 5, nevertheless, provides a more comfortable body-contacting surface against the baby's bottom.

In Figure 5b, we have also shown an alternative version of the upstanding cuff wherein the elastic strands 30a and 30b are spaced slightly below the uppermost edge of the cuffs 27 and 28. This provides a loop of material which acts as a "cushion" to soften the contact between the elastic strands 30a and 30b and the baby's body.

Figure 7 shows how the cuffs can be formed when the in-turned portion 50 of the cuff extends fully down to the central portion 26. The cuff is rendered impermeable to all fluids either by applying a coating 51 of "BARRIER GUARD" (a trademark of I.G.I. Co.) hot melt material or securing a very thin plastic film such as polyethylene between the plies of the cuff.

Figure 8 shows how the coverstock and the cuffs may be formed from a single piece 52 of web material, and the over-layer 26-a fastened thereto between the bases of the cuffs.

Figure 9 is similar to Figure 6 but illustrates how the coverstock 53 can be formed from a plurality of webs, the central portion 54 being pervious and the side portions 55,56 being impervious. In this embodiment the overlayer 26 and the cuffs 27,28 are formed in much the same manner as described in reference to Figures 5-a, 5-b and 7.

In all cases, the overlayer second ply 25 is secured to the first ply 12 at the edges 31 and 32, but not in the intervening area 33, thus to provide a "space" between the plies 12 and 25 which enhances the wetback characteristic (i.e., prevents fluid from flowing out of the core back through the plies into the contact with the baby's body) while yet, at the same time, increasing the spacing between the upper surface of the ply 25 and the absorbent core 13. This space effect is sometimes referred to as a "blousing" effect.

It is to be understood that the absence of any adhesive to bind these two plies together not only improves

the wetback characteristic, but also enhances the economics of the diaper construction.

This construction increases the "pass-through" of the fluid from the infant to the core and restricts the return of the fluid from the core through the plies 12 and 25 where it would otherwise wet the baby's bottom and tend to create diaper rash.

The top layer of the diaper of the present invention can be either pre-assembled off-line, or, if made on-line, have a separate elastic unwind mechanism. This manufacturing flexibility allows elastic in the cuffs to have a different percentage of stretch than the leg elastic. This reduced stretch in the elasticating mechanism of the cuffs minimizes skin discomfort because it is less tightly in contact with the body of the baby.

Diapers made according to this concept have been proven to be satisfactory when there is an optimum stretch of 200% in the elastic strands 30a and 30b.

Additionally, we believe that the upstanding cuffs which have a vertical height, when stretched, in excess of 6.35 mm (1/4") but not exceeding 25.4 mm (1"), provide the optimum fecal control characteristic.

It will be noted particularly that the ends 34, 35, 36 and 37 of the elastic strands 30a and 30b terminate in the upstanding cuffs 27 and 28 at the ends thereof, and are, therefore, separated from the first ply 12 in the waistband areas 20 and 21.

This construction enables the elastic strands 30a and 30b more effectively to create a "pocket" between the upstanding cuffs 27 and 28 and the ends of the diaper in the waistband portion 20 and 21 by pulling the outer edges of the waistband ends 38 and 39 upwardly, as is shown at 40 in Figure 3.

The second ply 25 of nonwoven material may, in the end portions 38 and 39 and the side portions 27b and 28b, be treated to render the material at that point impervious to fluid (i.e., impervious to both liquids and gases) without adversely affecting the perviousness or pass-through characteristics of the horizontal portion 26 between the fastening lines 31 and 32.

It is to be understood that the second ply 25 may be secured to the first ply 12 along the fastening line 31 and 32 by a thin bead of adhesive or by ultrasonic welding or any similar well-known method.

As is well known, environmental protocol starts with reduction of waste at the source, and in the present invention the use of a lesser quantity of non-woven material is an important way to improve the environment.

In addition to being a reduction of waste at the source, the two lighter-weight materials in the diaper of the present invention will degrade at a faster rate than one layer of nonwoven of basis weight equivalent to the two layers of the lighter weight nonwoven. Two layers of $1.02 \cdot 10^{-2}$ kg/m² (0.3 oz./sq. yd.) nonwoven will degrade under thermo, ultra-violet, composting, or landfill conditions at a faster rate than one layer of $2.04 \cdot 10^{-2}$ kg/m² (0.6 oz./sq. yd.) nonwoven.

We have also found that the use of a degradable adhesive like the "BARRIER GUARD" material of I.G.I. Nonwovens Division (Lyndhurst, New Jersey) of THE INTERNATIONAL GROUP INC. improves the degradability of the entire diaper and, in addition to the source reduction advantage of the diaper of the present invention, aids in the ultimate disposability of the product after it has been used.

As an illustration of the economy of construction and, therefore, the improved positive impact on the environment, one can make a comparison with the consumption of nonwoven material in the diaper and a conventional diaper.

A conventional diaper generally uses a nonwoven web 0.3 m (12") wide of a basis weight of $2.37 \cdot 10^{-2}$ kg/m² (.7 oz./sq. yd.) Therefore, a unit weight of this material is 3.35 g/medium diaper (.118 oz./medium diaper).

In the present invention, the multi-ply web of $1.02 \cdot 10^{-2}$ kg/m² (.3 oz./sq. yd.) material uses one layer or ply 0.3 m (12") wide and another one 0.2 m (8") wide, for a total of 0.5 m (20"), or a unit weight of 2.35 g/medium diaper (.0830 oz./medium diaper). This is 70% of the normal consumption of nonwoven material and represents an environmental improvement because there is less raw material consumed at the source, and less nonwoven material to be disposed of with the soiled diaper.

It is to be understood that the present invention may be embodied in other specific forms without departing from the spirit or special attributes hereof, and it is therefore desired that the present embodiments be considered in all respects as illustrative, and therefore not restrictive, reference being made to the appended Claims rather than to the foregoing description to indicate the scope of the invention.

Claims

1. A disposable absorbent pad such as a baby diaper (10) or adult incontinent pad, comprising
 - a backsheet (11),
 - a multi-ply topsheet, and
 - an absorbent core (13) between said backsheet (11) and said topsheet, whereby
 - said core (13) has lateral edges (17) and end edges,
 - the backsheet (11) and the multi-ply topsheet are secured together around the edges of said core (13) to hold said core (13) therebetween,
 - said multi-ply topsheet has a first ply (12) of substantially the same width as the backsheet (11) and a second ply (25) which overlies the said first ply (12),
 - said second ply (25) has lateral edges (27, 28) defining a width narrower than the width of said first ply (12),
 - said second ply (25) is secured on top of said first ply (12) along a pair of fastening lines (31, 32) spaced inwardly from the lateral edges (17) of the core (13),
 - said second ply (25) has elastic members (30a, 30b) secured along the lateral edges (27, 28) thereof,
 - said elastic members (30a, 30b) have ends,
 - said lateral edges (27, 28) of said second ply (25) extend away from the first ply (12), under the influence of the said elastic members (30a, 30b) between the said elastic members (30a, 30b) and the said fastening lines (31, 32), and
 - the ends of said elastic members (30a, 30b) are unsecured to the first ply (12),
2. A disposable absorbent pad of Claim 1, characterized in that the lateral edges (27, 28) of said second ply (25) include a turned-back portion (27a, 28a) to create a tunnel in which the said elastic members (30a, 30b) are disposed.
3. A disposable absorbent pad of Claim 1, characterized in that the second ply (25) is pervious between the fastening lines (31, 32) but between the said fastening lines (31, 32) and the adjacent lateral edges (27, 28) of the second ply (25) is treated to render it impervious to both liquids and gases.
4. The pad of Claim 3, characterized in that the impervious treatment is a thin coating of hot melt material.
5. The pad of Claim 3, characterized in that the impervious treatment is a thin plastic film.
6. The pad of Claim 5, characterized in that the thin plastic film is polyethylene.
7. A disposable absorbent pad of Claim 1, characterized in that the sum of the widths of the first (12) and second (25) plies of the multi-ply topsheet is less than twice the width of the first ply (12) of said multi-ply topsheet.
8. A disposable absorbent pad of Claim 1, characterized in that it includes second elastic members, said second elastic members being secured to said backsheet (11) and topsheet outwardly of the lateral edges (17) of said core (13).
9. A disposable absorbent pad of Claim 8, characterized in that the tension in the second elastic members is greater than the tension in the elastic

members (30a, 30b) secured along the lateral edges (27, 28) of the second ply (25).

10. A disposable absorbent pad of Claim 2, characterized in that the turned-back portions (27a, 28a) are turned outwardly. 5
11. A disposable absorbent pad of Claim 2, characterized in that the turned-back portions (27a, 28a) are turned inwardly. 10
12. A disposable absorbent pad of Claim 1, characterized in that the first ply (12) is made of a plurality of different non-woven materials. 15
13. A disposable absorbent pad of Claim 12, characterized in that the first ply (12) has a central pervious portion and an impervious portion secured along each side of the pervious portion. 20
14. A disposable absorbent pad of Claim 1, characterized in that the unsecured portions between the first (12) and second (25) plies create a blousing effect. 25
15. A disposable absorbent pad of Claim 4, characterized in that a degradable adhesive is used for securing the backsheet (11) and topsheet together, for providing the fastening lines (31, 32), and for creating the impervious treatment between the sides of the cuffs. 30

Patentansprüche

1. Absorbierende Wegwerfwindel wie eine Babywindel (10) oder eine Windel für an Inkontinenz leidende Erwachsene 35
 - mit einer Unterbahn (11),
 - mit einer mehrlagigen Oberbahn und
 - mit einem absorbierenden Kern (13) zwischen der Unterbahn (11) und der Oberbahn, wobei der Kern (13) Seitenränder (17) und Stirnränder hat, 40
 - die Unterbahn (11) und die mehrlagige Oberbahn um die Ränder des Kerns (13) herum miteinander verbunden sind, um den Kern (13) dazwischen zu halten, 45
 - die mehrlagige Oberbahn eine erste Lage (12) mit im wesentlichen der gleichen Breite wie die Unterbahn (11) und eine zweite Lage (25) aufweist, die über der ersten Lage (12) liegt, 50
 - die zweite Lage (25) Seitenränder (27, 28) aufweist, die eine Breite bilden, die schmäler als die Breite der ersten Lage (12) ist,
 - die zweite Lage (25) an der Oberseite der ersten Lage (12) längs eines Paares von Befestigungslinien (31, 32) festgelegt ist, die nach innen von den Seitenrändern (17) des Kerns (13) beabstandet sind, 55

- die zweite Lage (25) elastische Elemente (30a, 30b) aufweist, die längs ihrer Seitenränder (27, 28) festgelegt sind,
- die elastischen Elemente (30a, 30b) Enden haben,
- die Seitenränder (27, 28) der zweiten Lage (25) sich unter der Einwirkung der elastischen Elemente (30a, 30b) zwischen den elastischen Elementen (30a, 30b) und den Befestigungslinien (31, 32) von der ersten Lage (12) weg erstrecken und
- die Enden der elastischen Elemente (30a, 30b) nicht an der ersten Lage (12) festgelegt sind,

dadurch gekennzeichnet, daß die erste Lage (12) und die zweite Lage (25) zwischen den Befestigungslinien (31, 32) nicht miteinander verbunden sind, so daß dazwischen ein Raum bereitgestellt wird.

2. Absorbierende Wegwerfwindel nach Anspruch 1, dadurch gekennzeichnet, daß die Seitenränder (27, 28) der zweiten Lage (25) einen umgeschlagenen Abschnitt (27a, 28a) zur Schaffung eines Tunnels aufweisen, in dem die elastischen Elemente (30a, 30b) angeordnet sind.
3. Absorbierende Wegwerfwindel nach Anspruch 1, dadurch gekennzeichnet, daß die zweite Lage (25) zwischen den Befestigungslinien (31, 32) durchlässig, zwischen den Befestigungslinien (31, 32) und den angrenzenden Seitenrändern (27, 28) der zweiten Lage (25) jedoch so behandelt ist, daß sie sowohl für Flüssigkeiten als auch für Gase undurchlässig ist.
4. Windel nach Anspruch 3, dadurch gekennzeichnet, daß die Undurchlässigkeitsbehandlung aus einer dünnen Beschichtung aus Heißschmelzmaterial besteht.
5. Windel nach Anspruch 3, dadurch gekennzeichnet, daß die Undurchlässigkeitsbehandlung aus einer dünnen Kunststoffolie besteht.
6. Windel nach Anspruch 5, dadurch gekennzeichnet, daß die dünne Kunststoffolie aus Polyethylen besteht.
7. Absorbierende Wegwerfwindel nach Anspruch 1, dadurch gekennzeichnet, daß die Summe der Breiten der ersten Lage (12) und der zweiten Lage (25) der mehrlagigen Oberbahn weniger als zweimal die Breite der ersten Lage (12) der mehrlagigen Oberbahn beträgt.
8. Absorbierende Wegwerfwindel nach Anspruch 1, dadurch gekennzeichnet, daß sie zweite elastische Elemente aufweist, wobei die zweiten elastischen

Elemente an der Unterbahn (11) und an der Oberbahn außerhalb der Seitenränder (17) des Kerns (13) festgelegt werden.

9. Absorbierende Wegwerfwindel nach Anspruch 8, dadurch gekennzeichnet, daß die Spannung in den zweiten elastischen Elementen größer als die Spannung in den elastischen Elementen (30a, 30b) ist, die längs der Seitenränder (27, 28) der zweiten Bahn (25) festgelegt sind. 5
10. Absorbierende Wegwerfwindel nach Anspruch 2, dadurch gekennzeichnet, daß die umgeschlagenen Abschnitte (27a, 28a) nach außen umgeschlagen sind. 10
11. Absorbierende Wegwerfwindel nach Anspruch 2, dadurch gekennzeichnet, daß die umgeschlagenen Abschnitte (27a, 28a) nach innen umgeschlagen sind. 15
12. Absorbierende Wegwerfwindel nach Anspruch 1, dadurch gekennzeichnet, daß die erste Lage (12) aus einer Vielzahl verschiedener Vliesmaterialien besteht. 20
13. Absorbierende Wegwerfwindel nach Anspruch 12, dadurch gekennzeichnet, daß die erste Lage (12) einen zentralen durchlässigen Abschnitt und einen längs jeder Seite des durchlässigen Abschnitts festgelegten undurchlässigen Abschnitt aufweist. 25
14. Absorbierende Wegwerfwindel nach Anspruch 1, dadurch gekennzeichnet, daß die unbefestigten Abschnitte zwischen der ersten Lage (12) und der zweiten Lage (25) einen Aufbauscheffekt schaffen. 30
15. Absorbierende Wegwerfwindel nach Anspruch 4, dadurch gekennzeichnet, daß für das Verbinden der Unterbahn (11) mit der Oberbahn, für das Bereitstellen der Befestigungslinien (31, 32) und für das Schaffen der Undurchlässigkeitsbehandlung zwischen den Seiten der Aufschläge ein abbaubarer Klebstoff verwendet wird. 35

Revendications

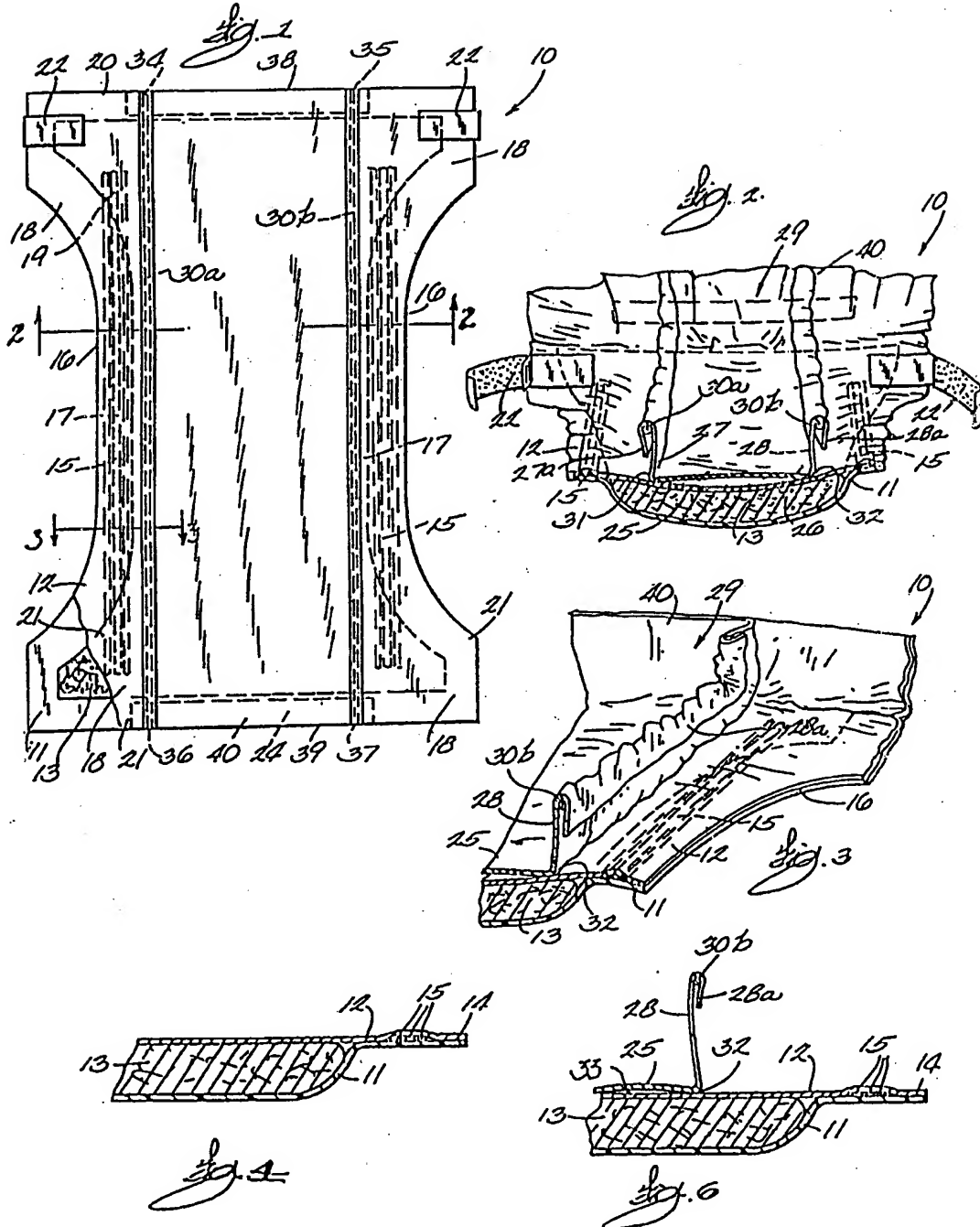
1. Couche absorbante jetable, telle qu'une couche-culotte (10) pour bébé, ou couche d'incontinence pour adulte, comprenant : 50
 - une feuille de fond (11),
 - une feuille supérieure à couches multiples, et
 - un noyau absorbant (13) entre ladite feuille de fond (11) et ladite feuille supérieure, dans laquelle 55
 - ledit noyau (13) a des bords latéraux (17) et des bords d'extrémité,

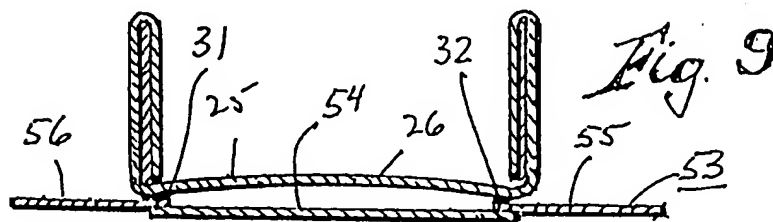
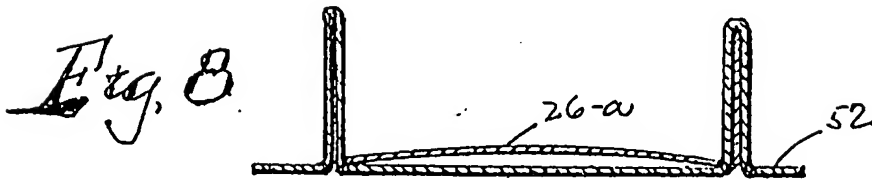
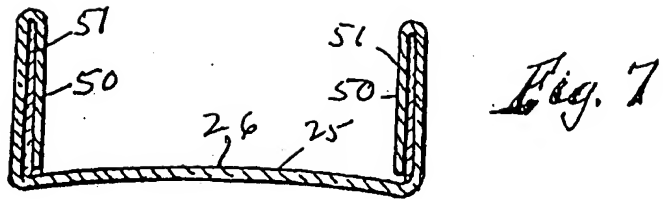
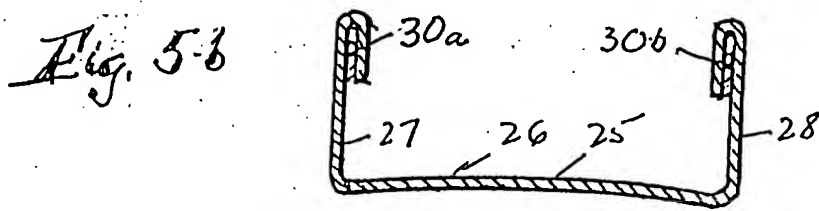
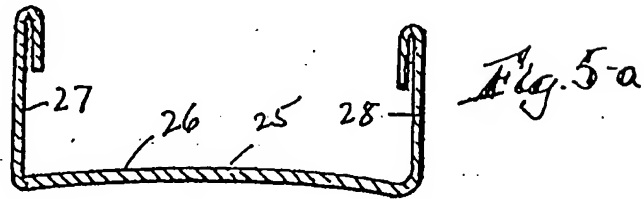
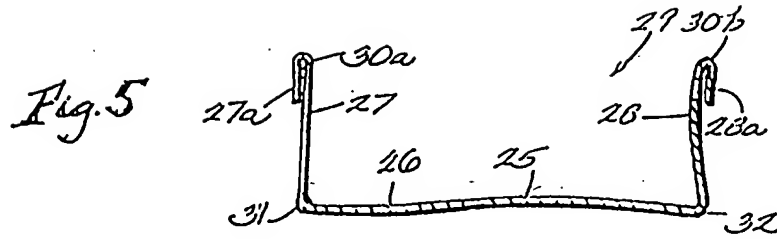
- la feuille de fond (11) et la feuille supérieure à couches multiples sont fixées l'une sur l'autre autour des bords dudit noyau (13) pour maintenir le noyau (13) entre elles,
- ladite feuille supérieure à couches multiples possède une première couche (12) qui a sensiblement la même largeur que la feuille de fond (11), et une seconde couche (25) qui couvre ladite première couche (12),
- ladite seconde couche (25) a des bords latéraux (27, 28) qui définissent une largeur inférieure à la largeur de ladite première couche (12),
- ladite seconde couche (25) est fixée sur le dessus de ladite première couche (12) le long d'une paire de lignes de fixation (31, 32) situées à une distance et à l'intérieur des bords latéraux (17) du noyau (13),
- ladite seconde couche (25) est pourvue d'éléments élastiques (30a, 30b) fixés le long de ses bords latéraux (27, 28);
- lesdits éléments élastiques (30a, 30b) ont des extrémités,
- lesdits bords latéraux (27, 28) de ladite seconde couche (25) s'écartent de ladite première couche (12) sous l'influence desdits éléments élastiques (30a, 30b) s'étendant entre lesdits éléments élastiques (30a, 30b) et lesdites lignes de fixation (31, 32), et
- les extrémités desdits éléments élastiques (30a, 30b) ne sont pas fixées sur la première couche (12),

caractérisée en ce que ladite première couche (12) et ladite seconde couche (25) ne sont pas fixées l'une sur l'autre entre les lignes de fixation (31, 32) afin de ménager un espace entre elles.

2. Couche absorbante jetable selon la revendication 1, caractérisée en ce que les bords latéraux (27, 28) de ladite seconde couche (25) sont pourvus d'une portion retournée (27a, 28a) pour créer un tunnel dans lequel lesdits éléments élastiques (30a, 30b) sont placés. 40
3. Couche absorbante jetable selon la revendication 1, caractérisée en ce que la seconde couche (25) est perméable entre les lignes de fixation (31, 32) mais est traitée, entre lesdites lignes de fixation (31, 32) et les bords latéraux (27, 28) adjacents de la seconde couche (25), pour la rendre imperméable à la fois aux liquides et aux gaz. 45
4. Couche selon la revendication 3, caractérisée en ce que le traitement imperméable est un revêtement fin fait d'une matière thermofusible. 50

5. Couche selon la revendication 3, caractérisée en ce que le traitement imperméable est un film mince en plastique.
6. Couche selon la revendication 5, caractérisée en ce que le film mince en plastique est en polyéthylène. 5
7. Couche absorbante jetable selon la revendication 1, caractérisée en ce que la somme des largeurs des première (12) et seconde (25) couches de la feuille supérieure à couches multiples est inférieure à deux fois la largeur de la première couche (12) de ladite feuille supérieure à couches multiples. 10
8. Couche absorbante jetable selon la revendication 1, caractérisée en ce qu'elle est pourvue de seconds éléments élastiques, lesdits seconds éléments élastiques étant fixés sur lesdites feuille de fond (11) et feuille supérieure à l'extérieur des bords latéraux (17) dudit noyau (13). 15 20
9. Couche absorbante jetable selon la revendication 8, caractérisée en ce que la tension dans les seconds éléments élastiques est supérieure à la tension dans les éléments élastiques (30a, 30b) fixés le long des bords latéraux (27, 28) de la seconde couche (25). 25
10. Couche absorbante jetable selon la revendication 2, caractérisée en ce que les portions retournées (27a, 28a) sont tournées vers l'extérieur. 30
11. Couche absorbante jetable selon la revendication 2, caractérisée en ce que les portions retournées (27a, 28a) sont tournées vers l'intérieur. 35
12. Couche absorbante jetable selon la revendication 1, caractérisée en ce que la première couche (12) est faite d'une pluralité de matériaux différents non-tissés. 40
13. Couche absorbante jetable selon la revendication 12, caractérisée en ce que la première couche (12) possède une partie perméable centrale et une partie imperméable fixée le long de chaque côté de la partie perméable. 45
14. Couche absorbante jetable selon la revendication 1, caractérisée en ce que les parties non fixées entre les première (12) et seconde (25) couches produisent un effet blousant. 50
15. Couche absorbante jetable selon la revendication 4, caractérisée en ce qu'un adhésif dégradable est utilisé pour fixer la feuille de fond (11) et la feuille supérieure l'une sur l'autre, pour fournir les lignes de fixation (31, 32) et pour créer le traitement imperméable entre les côtés des manchettes. 55





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